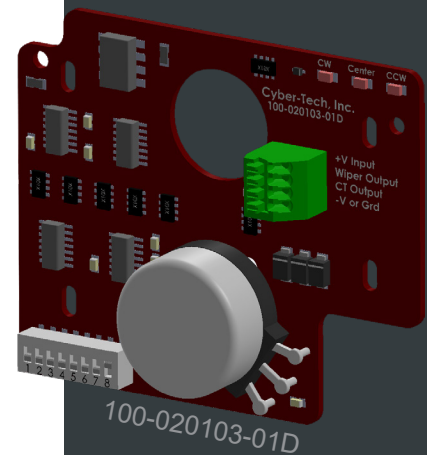


Cyber-Tech's Proportional Controller Card offers a direct replacement for costly center tap potentiometers. Designed with the same industrial quality that's found in all Cyber-Tech's products. This Proportional Controller Card is equipped with eight selectable proportional output styles.

| Specifications | 100-020103-01 |
|----------------------------|--------------------------------------|
| Input Volatage Range: | +5-30vDC or ±15vDC |
| CT Output Voltage | ±50% of Supplied Voltage ±1.5% |
| Rated Output Current: | 15mA Max |
| Proportional Output Style: | Selectable Options (see chart pages) |
| Deflection: | Rail to Rail (Limited by Gearing) |
| Environmental | |
| Operating Temperature | -40°C to 85°C |
| Protection | |
| Output Short Circuit | Continuous |
| Over / Undervoltage | None |

*Extended short-circuit will decrease the longevity and reliability
Does not include internal fuses. If fusing is required they must be externally installed



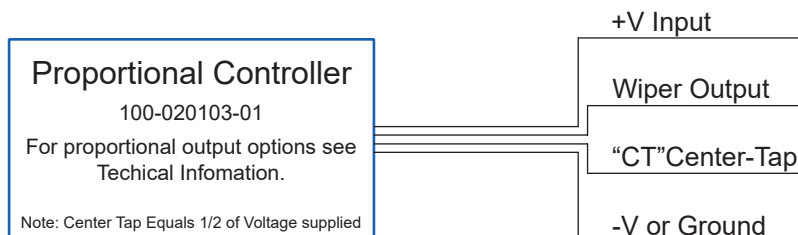
Testing, Centering and Installing

Before proceeding be sure to read and understand all specification and variability's

1. Test Unit prior to installing
 - a. Set dip switch to position 1. (proportional option #8)
 - b. Supply positive voltage to +V Input.
 - c. Supply ground to -V or ground Input.
 - d. Turn power supply ON.
 - e. With a voltmeter take readings between ground and the wiper output while slowly turning the potentiometer to its limits and then returning to center.
 - f. Verify that the voltage increases and decreases smoothly within the voltage perimeters.
 - g. Repeat Steps a. through f. in all other proportional setting.
2. Centering Unit
 - a. Carefully remove the hub-gear. (if supplied)
 - b. Set dip switch to position 1. (proportional option #8)
 - c. Follow steps b. through d. in the Testing Procedures.
 - d. With a voltmeter take readings between ground and the wiper output, this value should equal 0 volts ±1.5%.
 - e. If unit is not centered adjust clockwise or counter clockwise until center is achieved.
3. Installing
 - a. Loosely secure the unit to the joystick using 4x, 4-40 x 3/8 button head screws, washers and spacers.
 - b. Install the hub-gear on to the controller card. (do not tighten down the set screw)
 - c. Carefully slide the unit up until the hub-gear and segment-gear mesh properly.
 - d. Tighten down the 4-40 screws by hand.
 - e. Retest unit for center, adjust if needed.
 - f. Lightly snug down the set screw in the hub-gear. (Do not over tighten the set screw as this may damage the hub gear and controller card.)
 - g. Verify that the segment-gear and hub-gear are properly aligned and move freely without interface.
 - h. Wire unit according to customer approved schematics.

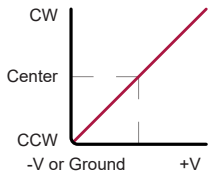
FEATURES

- Wide voltage input range
- Easy field replacement
- Directional LED'S.
- Low noise output suitable for powering sensitive instrumentation
- Positive and negative voltage circuitry.
- Easily Upgradeable to existing units.
- Designed for the JS-500 but can be used standalone

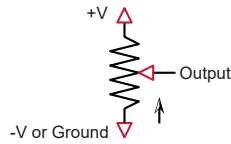


Proportional Controller Card (For JS-500-HD)

Proportional Movement



Proportional Representation



Proportional Option #1

Dip-Switch 8

Normal Supplied Power

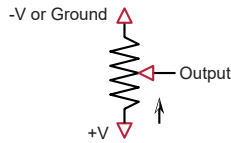
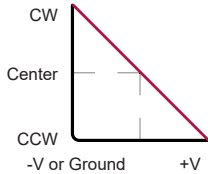
Voltage increases from ground (cw) to +V supplied (ccw)

Example: Using ground and +10 volts. (ccw = 0V center = +5V cw = +10V)

Negative Supplied Power

Voltage increases from -V supplied (cw) to +V supplied (ccw)

Example: Using -10 volts. and +10 volts (ccw = -10V center = 0V cw= +10V)



Proportional Option #2

Dip-Switch 7

Normal Supplied Power

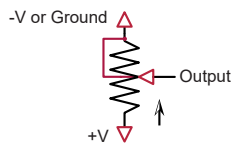
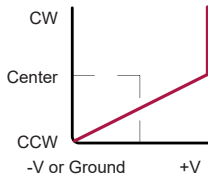
Voltage decreases from +V supplied (cw) to ground (ccw)

Example: Using ground and +12 volts. (ccw = +12V center = 6V cw= 0V)

Negative Supplied Power

Voltage increases from -V supplied (cw) to +V supplied (ccw)

Example: Using -12 volts. and +12 volts (ccw = +12V center = 0V cw= -12V)



Proportional Option #3

Dip-Switch 6

Normal Supplied Power

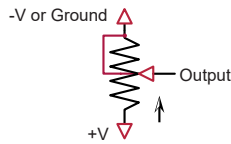
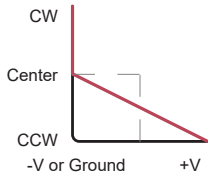
+V supplied (cw) remains through (center and full cw) then decreases to ground (ccw)

Example: Using ground and +15 volts. (ccw = 0V center = +15V cw= +15V)

Negative Supplied Power

+V supplied (cw) remains through (center and full cw) then decreases to -V supplied (ccw)

Example: Using -15 volts. and +15 volts (ccw = -15V center = +15V cw= +15V)



Proportional Option #4

Dip-Switch 5

Normal Supplied Power

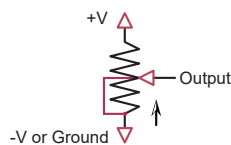
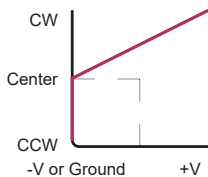
Ground (cw) remains through (center and full cw) then increases to +V supplied (ccw)

Example: Using ground and +5 volts. (ccw = +5V center = 0V cw = 0V)

Negative Supplied Power

-V supplied (cw and full cw) remains through (center and full cw) then increases to +V supplied (ccw)

Example: Using -5 volts. and +5 volts (ccw = +5V center = -5V cw = -5V)



Proportional Option #5

Dip-Switch 4

Normal Supplied Power

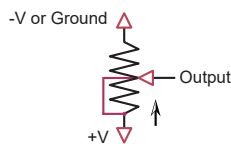
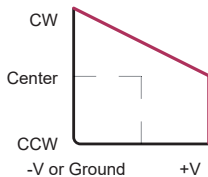
Voltage decreases from +V supplied (cw) to ground (center) and remains through (ccw)

Example: Using ground and +10 volts. (ccw = 0V center = 0V cw= +10V)

Negative Supplied Power

Voltage decreases from +V supplied (cw) to -V supplied (center) and remains through (ccw)

Example: Using -5 volts. and +5 volts (ccw = -5V center = -5V cw= +5V)



Proportional Option #6

Dip-Switch 3

Normal Supplied Power

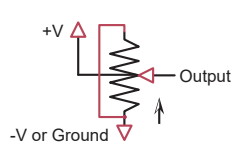
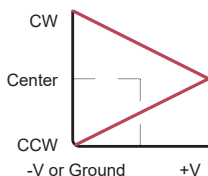
Voltage increases from ground (cw) to +V supplied (Center) and remains through (ccw)

Example: Using ground and +12 volts. (ccw = +12V center = +12V cw= 0V)

Negative Supplied Power

Voltage increases from -V (cw) to +V supplied (Center) remains through (ccw)

Example: Using -12 volts. and +12 volts (ccw = +12V center = +12V cw= -12V)



Proportional Option #7

Dip-Switch 2

Normal Supplied Power

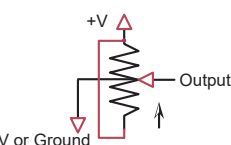
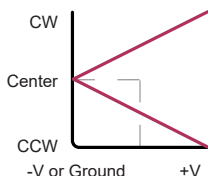
Voltage increases from ground (cw) to +V supplied (center) then decreases to ground (ccw)

Example: Using ground and +12 volts. (ccw = 0V center = +12V cw = 0V)

Negative Supplied Power

-V supplied (cw) increases to +V supplied (center) then decreases to -V supplied (ccw)

Example: Using -12 volts. and +12 volts (ccw = -12V center = +12V cw = -12V)



Proportional Option #8

Dip-Switch 1

Normal Supplied Power

Voltage decreases from +V supplied (cw) to ground (center) then increases to +V supplied (ccw)

Example: Using ground and +10 volts. (ccw = +10V center = 0V cw= +10V)

Negative Supplied Power

Voltage decreases from +V supplied (cw) to -V supplied (center) then increases to +V supplied (ccw)

Example: Using -5 volts. and +5 volts (ccw = +5V center = -5V cw= +5V)